CNR Card Offers Motherboard Expansion

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Overview

The Communication and Networking Riser (CNR) card provides OEMs and system integrators with a high-quality, flexible sell-up option while maintaining a price point that is less than a PCI add-in card. Contributing to this flexibility is support for all of the ATX family of form factors, with both standard/full height and low-profile cards defined. The multitude of features that can be added on a single card, such as LAN, home phone networking, V.90 analog modem, audio, and USB, make the CNR a compelling technology for all segments of the PC market.

Besides added flexibility, the CNR offers a number of advantages. The CNR addresses the space constraints and electrical interference of the motherboard and offers system integrators the opportunity to add value to desktop systems. In addition, the CNR makes it possible to ship more than one feature—or a combination of features—on a single platform, and allows separation of certification requirements from the motherboard. As a low-cost, flexible desktop riser, the CNR offers the solution for implementing a variety of communications and networking technologies, without sacrificing the PCI slot.

The Communication and Networking Riser Interface

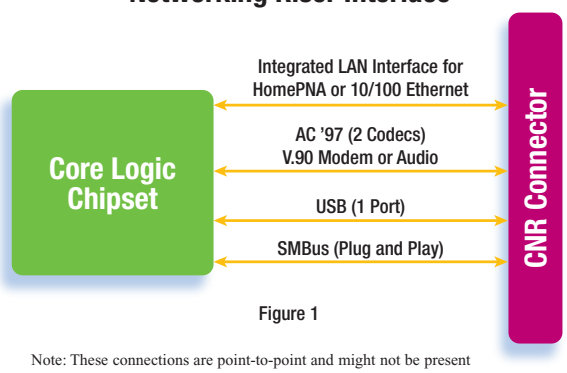

Figure 1

Note: These connections are point-to-point and might not be present in all systems. Check with the motherboard supplier.

Flexible Design

The backbone of the CNR interface consists of an AC '97-compliant AC link, a LAN interface, an SMBus interface, and a USB interface. As Figure 1 shows:

- The AC '97 interface supports up to six channels of audio and/or modem functions on the CNR board.
- LAN interfaces provide one of two LAN interfaces for networking functions. These interfaces enable 1-Mbps HomePNA, basic 10/100-Mbps Ethernet, or 10/100-Mbps Ethernet with Alert on LAN* (AoL).
- The USB interface supports a variety of technologies or functions implemented on a USB interface.
- The SMBus interface provides the CNR board with plug-and-play functionality.

Configuration Options

In the CNR architecture the audio, modem, and LAN subsystems can be partitioned in several different ways. This freedom gives system integrators the opportunity to design according to individual system need and end use. There are many different CNR card configurations, including these examples:

- *Integrated on-board audio, with CNR modem and home phone networking*—This configuration deploys the audio codec on the motherboard, with both the modem and home phone networking on the CNR board.
- *Integrated on-board audio, with CNR 10/100 LAN*—The audio codec is deployed on the motherboard, and the 10/100 Ethernet-based LAN PLC/PHY device on the CNR board.

Configuration Options *continued*

- *Combined CNR card with audio/modem and home phone networking*—An AC '97-combined audio/modem codec with a phone line PLC/PHY device introduces a higher level of integration and possibly a lower implementation cost.
- *Multichannel audio upgrade*—An audio codec is deployed on the motherboard, with an additional audio codec on the CNR board, allowing a single motherboard to produce multichannel audio.

Support for ATX Form Factors

The CNR specification defines a new riser solution for ATX, microATX, and FlexATX Form Factors, and offers system manufacturers a lower implementation cost for network, audio, modem, and future technology. This allows system manufacturers to integrate a feature-rich desktop PC using an ATX motherboard with basic features.

USB Options

The CNR card supports a USB Hub for multichannel USB expansion and allows future expansion to new technologies, including xDSL or wireless.

Flexible Network Solutions

The CNR provides three Intel® LAN options with a single driver for added flexibility. These include 1-Mbps HomePNA, basic 10/100-Mbps Ethernet, and 10/100-Mbps Ethernet with Alert on LAN (AoL). AoL emits an alert in the event of software failures or system intrusion, even when the operating system is not present or the system is suspended.

Summary

As PC user demands for complex interactive applications grow, industry trends toward lower cost are driving the need for higher levels of integration across all PC platforms.

Intel's new Communication and Networking Riser (CNR) delivers a hardware-scalable motherboard riser and interface that supports audio, modem, USB, and LAN interfaces at a lower bill of materials (BOM), or system cost, than industry-standard expansion slots or proprietary methods can achieve.

More Information

- Communication and Networking Riser (CNR) Web site on the Intel Developer Web site: (http://developer.intel.com/technology/cnr)
- Intel's February 7, 2000 news release announcing CNR specifications located in the News Archive area of Intel's online Press Room: (http://intel.com/pressroom/archive/releases/cn020700.htm)

Author Biography

K.L. Yeung joined Intel's Platform Marketing Group in 1999, following 12 years as a marketing manager for OEM and handheld test and measurement products at Tektronix, Inc. A native of Hong Kong, K.L. holds degrees in Electronic Engineering from Hong Kong Polytechnic University and in Business Administration from the University of East Asia. K.L. moved to the United States in 1994, and has earned numerous awards for excellence during his career.

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